



NASA's Suborbital Missions Teach Engineering and Technology



Goddard Space Flight Center's Wallops Flight Facility

Joyce L. Winterton, Ph.D.





Wallops Flight Facility

"goes to where the science is .."



LAUNCH RANGE SERVICES - MISSION FORMULATION - PROJECT MANAGEMENT - TECHNOLOGY DEVELOPMENT



INTERNATIONAL
SPACE STATION
205-250 miles

EXPENDABLE
LAUNCH VEHICLE
Low-earth orbit



OCEAN TO THE MOON
WALLOPS
DELIVERS

SOUNDING ROCKETS

Up to 900 miles



BALLOONS

Up to 120,000 feet



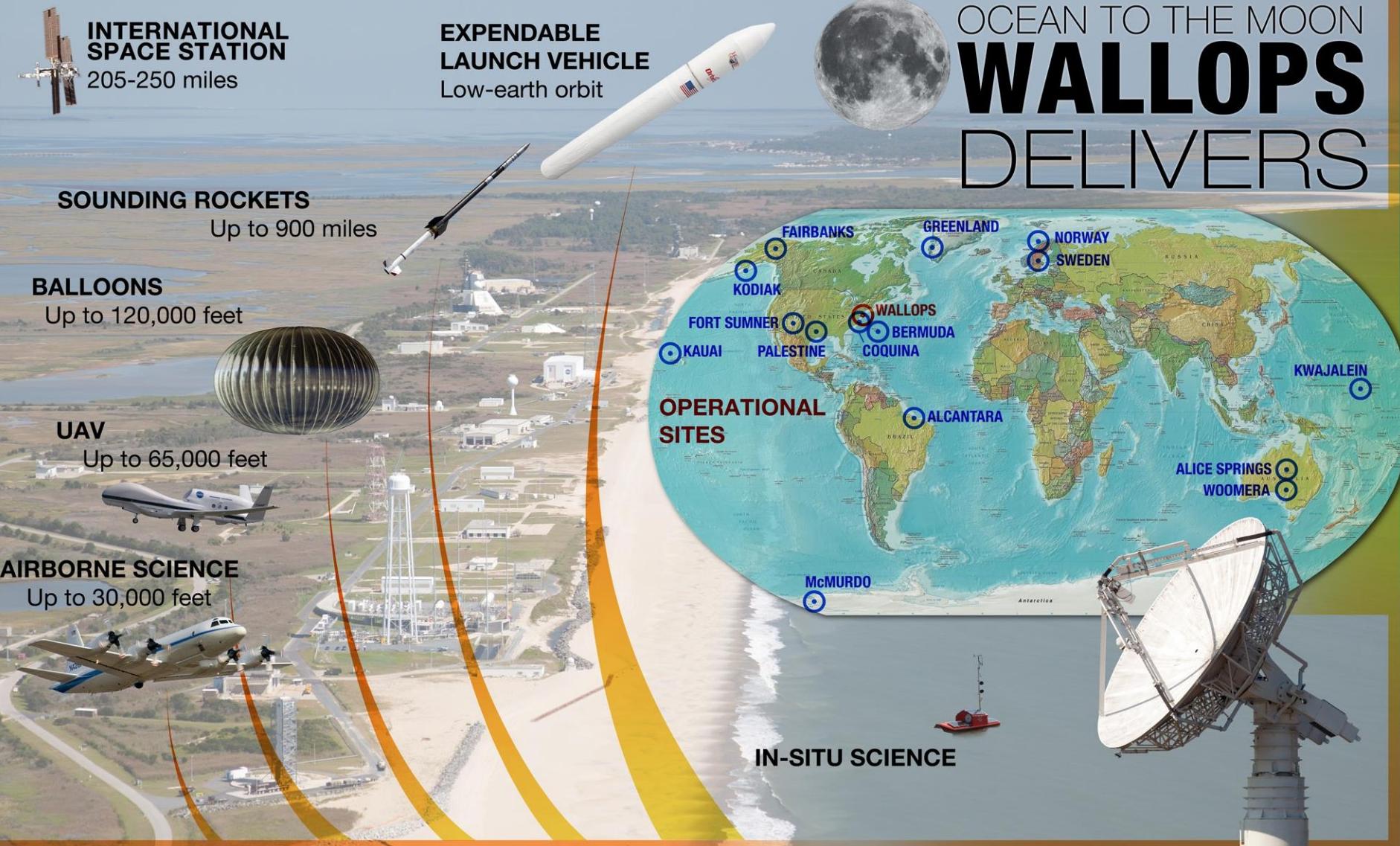
UAV

Up to 65,000 feet



AIRBORNE SCIENCE

Up to 30,000 feet



IN-SITU SCIENCE



ENGINEERING - ORBITAL TRACKING - EARTH AND OCEAN SCIENCE - SAFETY - EDUCATION



Programs at Wallops

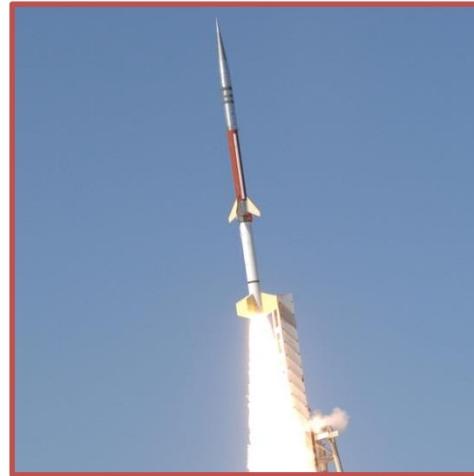
Small Satellites



Balloons



Sounding Rockets

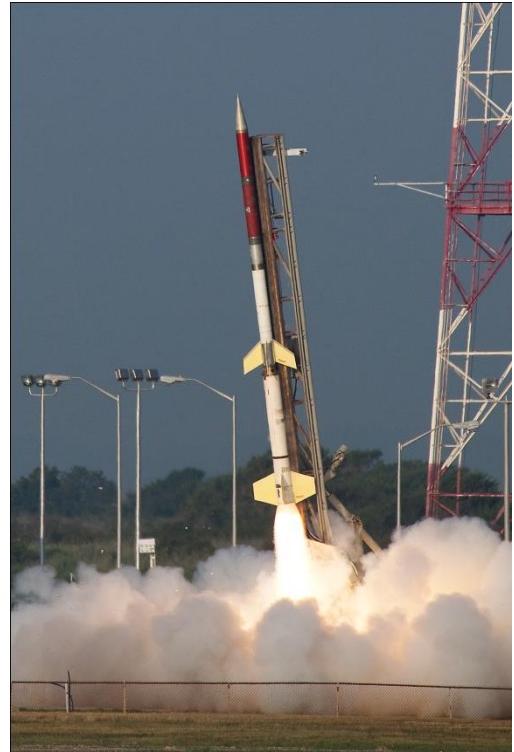


Aircraft



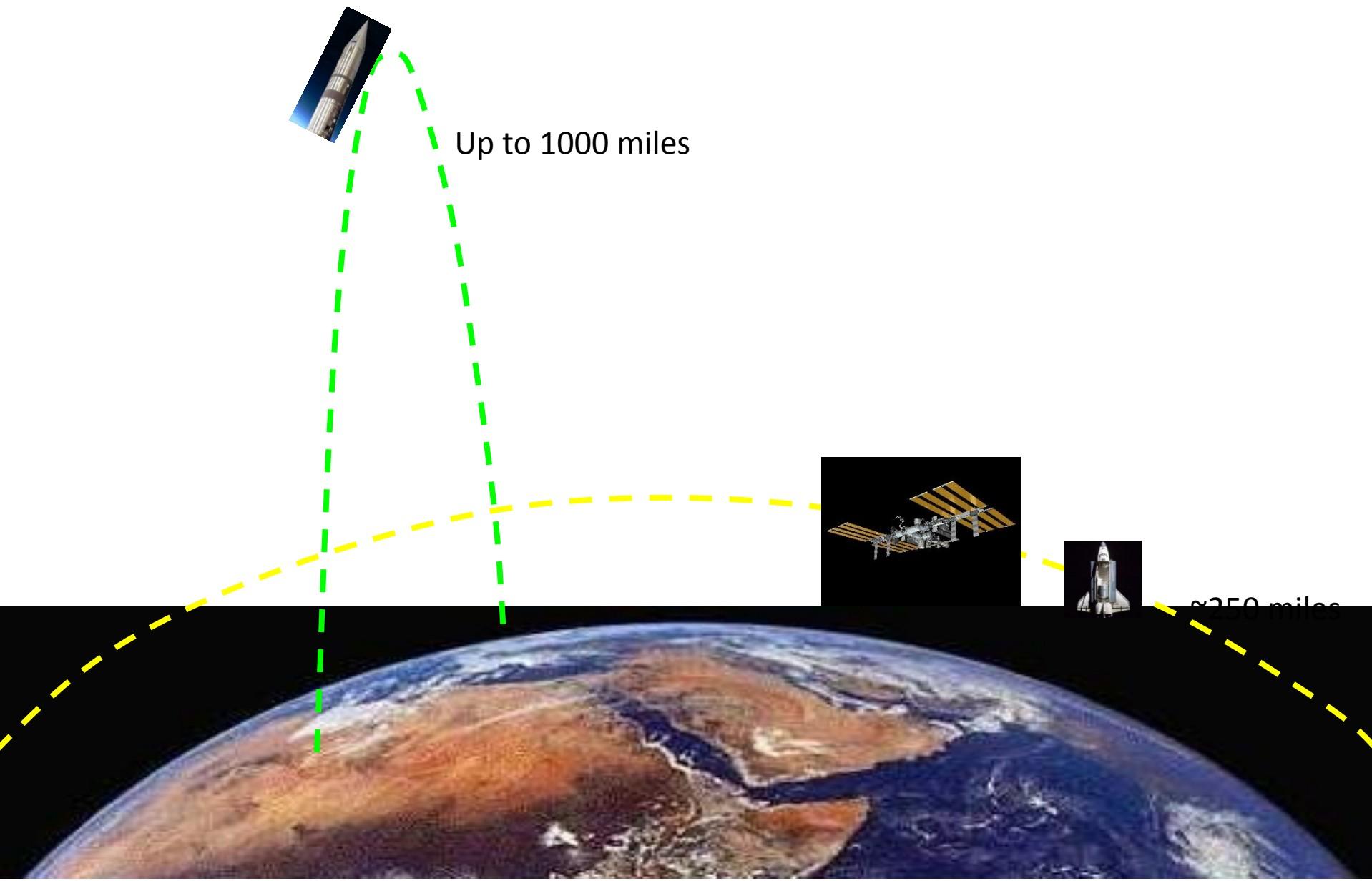


Sounding Rocket Program





Sounding Rocket Altitudes





Balloon Program Office

The Scientific Balloon Program is managed at Wallops but flights are conducted in various locations including New Mexico, Antarctica and Sweden



- Super Pressure Balloon



FY16 Antarctic Campaign - GRIPS

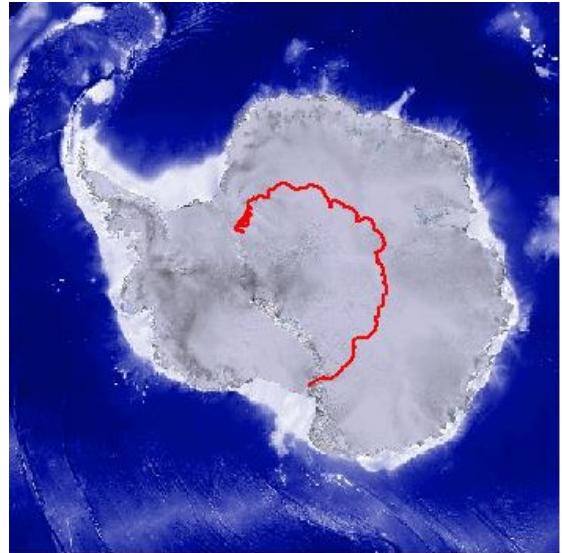
Gamma-Ray Imager/Polarimeter for Solar flares (GRIPS)

(Dr. Pascal Saint-Hilaire, UC Berkeley)

- GRIPS studied particle acceleration and energy release in solar flares using a combination of high-resolution imaging, spectroscopy, and polarimetry of solar-flare gamma-ray/hard X-ray emissions
- Balloon: 39.57MCF; Susp. Weight: 5,555 lbs.; Float Altitude: 127,000 ft.
- Launch Date: January 19 / Termination Date: January 30
- Total Flight Time: 11 days, 19 hours, 50 minutes



Payload is ready to launch





Airborne Science Research



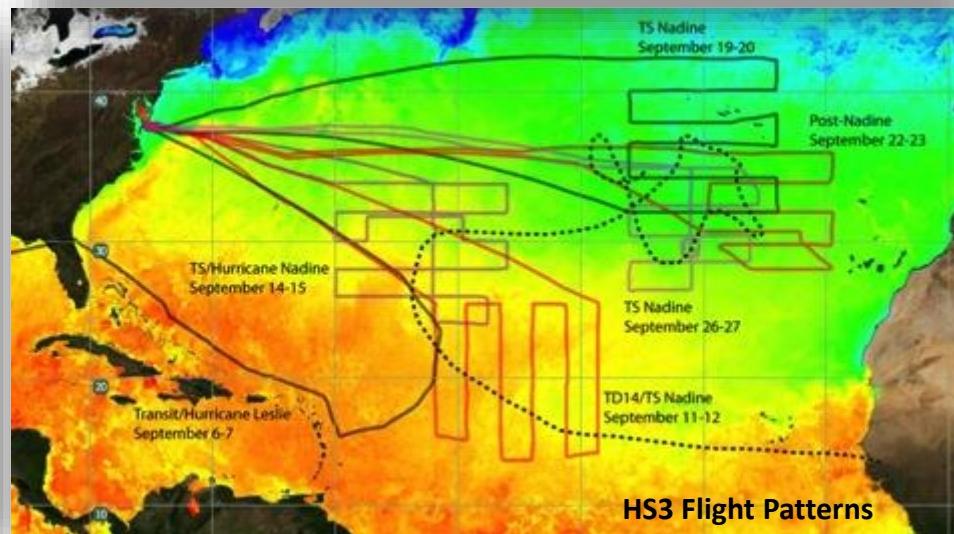
- Hurricane and Severe Storm Sentinel (HS3)
 - Studying the physical processes that control hurricane intensity change
 - NASA's Global Hawk unmanned aircraft returning to WFF
- August – October 2014



New Global Hawk Operations Center at Wallops



NASA Global Hawk at WFF—HS3, August 2012



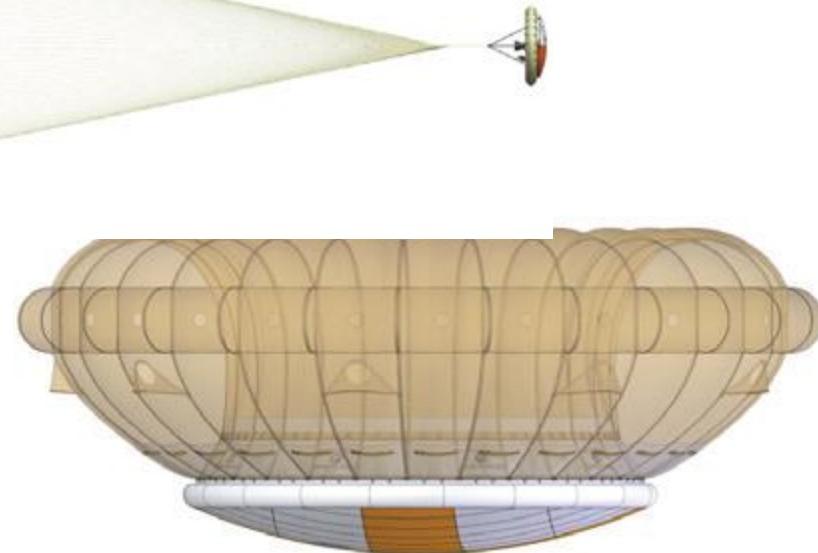
HS3 Flight Patterns



Space Technology Development and Testing



- Low-Density Supersonic Decelerator (LDSD)
 - Developing three Mars atmospheric entry/descent technologies: a 6-meter Supersonic Inflatable Aerodynamic Decelerator (SIAD), an 8-meter SIAD, and a 30-meter Supersonic Ringsail (SSRS) Parachute.

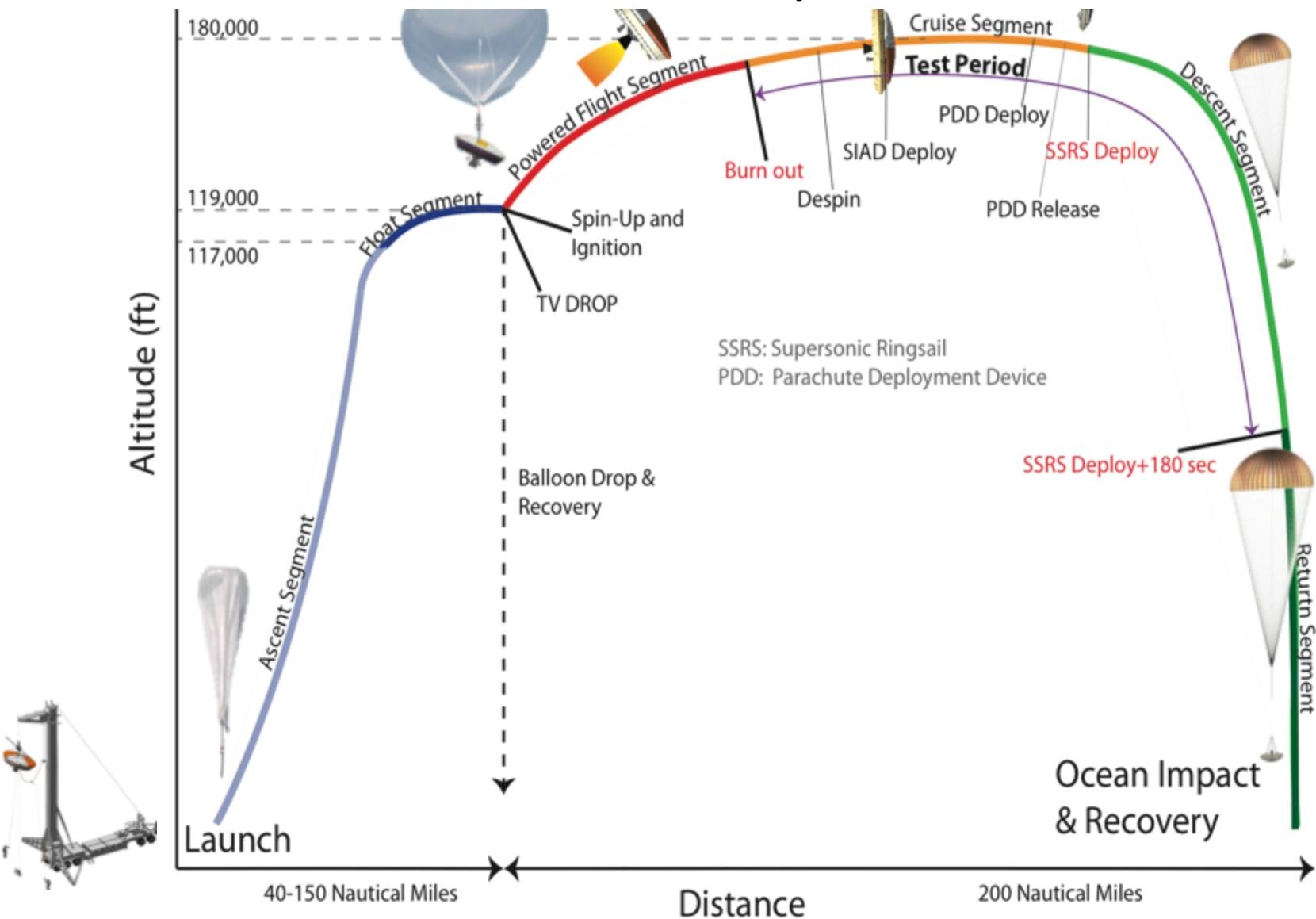




June 2014 Test



- LDSD Test Profile; launch planned Summer 2014



NASA Education Flight Projects

Authentic Technology and Engineering Experiences





Goddard Space
Flight Center

NASA Education Internships

Home - One Stop Shopping Initiative

https://intern.nasa.gov

Apps HR Portal Weather Google Webtads Login Employee Express SHETrak GSFC VPN NASA Webmail Inside GSFC Other bookmarks About OSSI

NASA Office of Education Infrastructure Division (OEID) Launchpad

An Innovative Solution to Support the STEM Workforce of Tomorrow

NASA Office of Education | NASA Office of Communications | NASA Human Capital Management | NASA Diversity and Equal Opportunity

OEID

Student Opportunities (circled in red)

Home Student Opportunities Student Information Data Collection and Analysis Support Systems Help

One Stop Shopping Initiative (OSSI)

One NASA System • One Submitted Application • One Amazing Opportunity

1 2 3 4 5 6 7 8

Due to scheduled maintenance activities, the OSS and OEPM applications will not be accessible effective Friday, November 15, 2013 - Sunday, November 17, 2013.

The OSS Summer Session application period is open from November 1, 2013 through March 1, 2014.

OSSI Student Opportunities and Recruitment Tools

NASA Internships, Fellowships, and Scholarships

NASA One Stop Shopping Initiative (OSSI)

- Student Assistance | More Details | Mentor Login
- Internships: Pre-College | Undergraduate | Graduate
- Fellowships
- Scholarships

NASA Pathways

- More Details
- Intern Employment (IEP)
- Recent Graduate Program (RGP)
- Presidential Management Fellows (PMF)

Student Information, Requests, and Community Outreach

NASA Student Ambassador Virtual Community Launch | More Details | Request Ambassadors

OSSI Information Center (OIC) Launch | More Details | Tutorial

Student Online Research Journal Launch | More Details | Mentor Login

Community Outreach Express Email Service Registration Launch

NASA Student Ambassador and Space Grant Students hosting a NASA booth at 2013 Wisconsin Science Festival

NASA CubeSat Space Missions

NASA is now accepting proposals for the CubeSat Launch Initiative. Proposals must be submitted electronically by 4:30 p.m. EST Nov. 26, 2013.

From the submissions, NASA will select the best proposals by Feb. 7, 2014. Developers whose proposals are selected may have the opportunity to see their creations launched as an auxiliary payload on a mission between 2014 and 2017. NASA will not provide funding for the development of the small satellites and selection does not guarantee a launch opportunity.

[More Info](#)

Student Challenge Opportunities

2014 NASA and Worcester Polytechnic Institute Sample Return Robot Challenge

NASA and the Worcester Polytechnic Institute in Worcester, Mass., are seeking teams to compete in a robot technology demonstration competition with a potential \$1.495 million prize purse. Teams will compete to demonstrate a robot that can locate and retrieve geologic samples from a wide and varied terrain without human control. Registration is open until Jan. 7, 2014. The competition will take place June 11-13, 2014.

[More Info](#)

NASA Night Rover Energy Challenge

Early registration through July 26, 2013
Regular deadline: October 25, 2013

[More Info](#)

Wallops Flight Facility Education – FY 2015 Results



Senior Advisor for Education: Dr. Joyce Winterton, Code 800

Education Specialist: Linda Sherman, Code 160, IPA

Educator Resource Center Coordinator: Samuel Henry, Contractor

Educator Professional Development

- Workshops participants included 90 educators from 20 states that will impact 5,572 students
- Educator Resource Center Completed



STEM Engagement

- 620 Secondary and High Education students participants in authentic experiences



Internships

- 30 collegiate and high school interns from 10 different states



Institutional Engagement

- Collaborate with 7 Eastern Shore School Districts in Virginia and Maryland (Accomack, Northampton, Worcester, Somerset, Wicomico, Dorchester, Caroline)
- University of Maryland Eastern Shore, Eastern Shore Community College, Salisbury University, Wor-Wic Community College, Virginia Space Grant



Undergraduate Student Instrument Project (USIP)

USIP



The primary goal is:

- ***To provide a hands-on flight project experience to enhance the science, technical, leadership, and project skills for the selected U.S. university undergraduate student team.***

The secondary goal is:

- ***To fly a science payload having a purpose relevant to the Science Mission Directorate's science goals***

Wallops: Reaching Farther for Science and Technology

Questions?

www.nasa.gov/wallops

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